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ABSTRACT

This content analysis examined 84 articles, published between 1950 and 1990, in order to discover and describe the conceptual trends in environmental social thought and to achieve three goals: (1) to write a brief history of ecological beliefs and to clarify the distinction between the ecocentric and anthropocentric perspectives; (2) to compare the beliefs and assumptions expressed by environmental educators with significant social ideas as they developed over time; and (3) to analyze the underlying assumptions, beliefs, and values that have guided environmental education thought since 1949. Trends are examined by decade from the 1950s through the 1980s and summarized under the categories of issues assumptions, language, and sources. Results indicated that though a deep ecology perspective was expressed much less often than the reform position, it was present in each category in each of the decades. Concludes that education has the choice of adapting a model of environmental education based on an ethic of ecocentricity that accepts the moral imperative to help students construct a value system that works for the natural world, or to perpetuate a set of beliefs that work against the creation of a sustainable society. (MDH)

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Situating Beliefs and Trends in Environmental Education within the Ecological Debate

AERA Paper Presentation

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Situating Beliefs and Trends in Environmental Education within the Ecological Debate

Introduction

In the 19th century, Thoreau complained of a "maimed and imperfect nature" because the forests near his home had been cut down a century before he lived. More recently, Sandra Postel and Lester Brown warned that we have created "an unprecedented momentum toward human-induced environmental change...without yet having the means to systematically monitor the results" (Brown & Postel, 1987, p. 18). As the litany of environmental problems grows, the theories, warnings, accusations, denials and solutions multiply. Private interest, governmental policy, environmental activism, and conflicting scientific analyses set the context for a wild debate, which, thus far, has had limited practical effect though it continues to escalate.

Underlying the myriad proposals are two fundamental and opposing viewpoints about the nature of nature and the human relation to it; one assumes humans to be the rightful owners and managers of nature, and the other is founded on a belief that humans are equal citizens within the earth's biotic community. Donald Worster has characterized this division as "the bifurcation of nature:"

> One might very well cast the history of ecology as a struggle between rival views of the relationship between human and nature; one view devoted to the discovery of an intrinsic value and its preservation, the other to the creation of an instrumentalized world and its exploitation. (Worster, 1990, p. xi)

The description is an oversimplification, however, for each side assumes multiple shades and nuances as it is inspected within its historical constructs. Inherent within each point of view are conflicting beliefs about the function of technology, the definition of progress, the value of competition and the role of humans in relation to natural phenomena. Many historical events and conditions have contributed to the insinuation of these ecological ideas into American consciousness, cultural attitude and behavior.

Because education functions within the socio-cultural-political context of the larger society, of which the environmental crisis is a significant phenomenon, the messages students receive will in large part determine their contribution toward ending or exacerbating this crisis. The language used to define ecological issues is crucial to the development of attitudes, values, and understandings students will use in the future. The environmental crisis is complex and encompasses a confusing and interconnected mixture of cultural, social, economic, scientific, and political dimensions. Education

about the environment needs to address those complexities and interrelationships in order to help students make sound informed decisions about their own behavior.

The Study

The purposes of this study were to discover and describe the conceptual trends in environmental social thought and in education since Aldo Leopold's essay "The Land Ethic" was published. There were three goals for the study: (a) to write a brief history of ecological beliefs and to clarify the distinction between the two leading perspectives - ecocentric (deep ecology) and anthropocentric (reform environmentalism); (b) to compare the beliefs and assumptions expressed by environmental educators with significant social ideas as they developed over time; and (c) to analyze the underlying assumptions, beliefs, and values that have guided environmental education thought since 1949.

Historical research methods were employed to gather data on the development of environmental events, ethics, and philosophy. Writers Roderick Nash (1989), Donald Worster (1990), Carolyn Merchant (1982), Bill Devall and George Sessions (1985), and others provided background and insight into the varied complexities of ecological philosophy as it has evolved over several centuries. Ideas presented by leading environmental writers who joined the increasing controversy during the forty year period were reviewed, including Barry Commoner, Rachel Carson, Paul Erlich, William Vogt, Fairfield Osborn, Wendell Berry, Lynn White, Jr., Murray Bookchin, Peter Singer, Christopher Stone, and others. Secondary sources on the history of the environmental movement included accounts by Joseph Petulla (1980), Victor B. Scheffer (1991), Stephen Fox (1981), and Donald Whisenhunt (1974).

Eighty-four articles, published between 1950 and 1990, which provided a statement of the purposes and goals of conservation education, nature study, and environmental education were selected for analysis. Until 1969, articles were drawn from forty different educational journals. Because the term "environmental education" was not used until the late 1960s, many of the articles selected referred to conservation education or nature study. In the fall of 1969, The Journal of Environmental Education, began publication and was quickly established as the outlet for discourse on the subject. Consequently, this journal was my primary source from 1969 to 1990. The articles were analyzed for their position within four organizing categories: (a) "Issues" - the environmental issues the author responded to; (b) "Assumptions" - the author's apparent underlying philosophical assumptions; (c) Concepts/Language - the language used and concepts emphasized in response to social, environmental, and educational changes; (d) "Authority" - sources of authority cited by the author, i.e., contemporary writers, government agencies, environmental organizations, etc.

Reform environmentalism

Colonial Americans viewed nature as sinful wilderness needing to be subdued. Where indigenous tribes had lived with minimum impact for hundreds of years, settlers feared the woods and systematically cleared hundreds of miles of trees. Plants and animal

beings were seen as inexhaustible as the pioneer experience glorified the rugged individual and his struggle to conquer the wilderness. This anthropocentric view stemmed from European beliefs about nature, God, and society that were developed in the 16th and 17th century by René Descartes, Isaac Newton, Francis Bacon and others. These philosophers and scientists described nature as machine-like, consisting of isolated and interchangeable parts, separate from and subordinate to humans, and manageable through technological innovation. Thomas Hobbes further provoked fear of the natural world by characterizing it as full of chaos and conflict (Fox, 1981; Merchant, 1982; Worster, 1990).

Late in the nineteenth century, President Teddy Roosevelt, alarmed at the rate pristine areas and national resources were disappearing, stepped in to regulate the level of consumption. Subsequently, the "wise use" policy was born and "resource management" became the tool for saving the nation's resources. Gifford Pinchot, chief of Roosevelt's new U.S. Forest Service, coined the slogan of the conservation new movement:

> ...the purpose of Conservation is the greatest good of the greatest number for the longest time. (Pinchot, 1947, p. 352)

This reformist managerial ethic, operating within the same core assumptions of the anthropocentric worldview established in the seventeenth century by Descartes, Newton, and Bacon, remains a strong element in most political, social, and scientific environmental approaches today.

Deep ecology

Preceding and co-existing with the ordered, predictable conception presented by mechanistic visions were notions of an organic, interrelated, and communal natural world that functioned according to an order and purpose of its own. Though a minority position in Western thought, this organismic view has remained a strong undercurrent, contradicting the most precious and elementary Cartesian ideas. The most recent manifestation of this stream of thought is deep ecology.

Deep ecology, an expression coined by Swedish philosopher Arne Naess in 1973, is a philosophical tenet rather than a scientific theory or public policy proposition. The term "deep" refers to the practice of asking deeper questions, as Warwick Fox explains:

> It asks "why" more insistently and consistently, taking nothing for granted...The deep ecological movement tries to clarify the fundamental presuppositions underlying our economic approach in terms of value priorities, philosophy, and religion. (Fox, 1990, pp. 125-126)

Deep ecology rejects a hierarchical human-centered premise and places humans at a level of biocentric equality within the nonhuman community. All life forms are held to be of intrinsic value and deserving of undisturbed existence irrespective of their economic value to humans. The present level of human interference in the natural world is considered extreme and unwarranted. Deep ecology appeals for simpler

lifestyles. Its ecological consciousness is greatly influenced by Native American traditions and Eastern philosophies such as Taoism and Buddhism (Devall & Sessions, 1985).

Henry David Thoreau and John Muir are early American writers who fit within a deep ecology typology. In 1949, Aldo Leopold's essay "The Land Ethic," also articulated deep ecology principles when he wrote:

> In short, a land ethic changes the role of Homo Sapiens from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such. (Leopold, 1949, p. 204)

The Fifties

In the first days of the Conservation Movement, there was a split between the conservationists, who followed Gifford Pinchot's utilitarian "wise use" approach, and preservationists, led by John Muir, who wanted to protect wilderness areas from any human use at all. The 1913 damming of the Hetch Hetchy valley in the Sierra Nevada drew the battle lines between the two forces, and though the conservation forces won in this instance, the ground was prepared for future preservation victories. When a new dam was proposed for Echo Park in Utah in 1949, there was overwhelming public opposition. Led by a coalition of volunteer organizations, the dam was eventually defeated and the efforts against it led to legislation prohibiting dams in any National Parks. In addition, work began on the Wilderness Bill which would eventually establish a comprehensive wilderness system throughout the United States (Nash, 1982).

While attention was directed toward the struggle between conservationists and preservationists, there were warnings that there was other trouble ahead. By the late forties smog had been identified. In 1957 it was traced to auto emissions, just as the interstate highway system was first under construction. In 1950, fourteen people died in Donora, Pennsylvania when factory smoke was trapped in an air inversion, and by 1959 over 100 million acres of public and private lands had been treated with herbicides. The seeds for future environmental degradation and debate were growing insidiously in the synthetic fibers, plastics, phosphates, biocides, insecticides, and high energy consuming appliances and automobiles that World War II inventions had introduced into civilian life (Scheffer, 1991).

Fairfield Osborn, founder of the Conservation Foundation, had suggested in his book Our Plundered Planet (1948) that faith in technological gadgets had blinded people to the need to care for the earth. William Vogt, former editor of Audubon Magazine, complained in his book, Road to Survival (Vogt, 1948) that capitalism was "ecologically ruinous," business had been set free to poison the waters at will, and ranchers, farmers, hunters and loggers were American "Typhoid Mary's" responsible for a sick environment (pp. 24, 145).

The educational discourse of the time, was consistent with the government's wise-use orientation toward nature; the purpose of conservation, it maintained, was to develop natural resources "to the fullest extent." Waste and destruction was to be avoided, but preservation was perceived as "senseless hoarding." For example, Martha E. Munzer, writing in the Journal of Educational Sociology observed:

> Conservation is, in essence, a way of life...This will include thought for the future, manifested not in senseless hoarding, but in sensible planning and management. (Munzer, 1957, p. 348)

Using conservation and resource development to protect "our way of life" and to keep America strong militarily and economically were steady themes throughout the educational writing in this decade. Good conservation was considered good citizenship; conservation education was the way to teach a student patriotism and "responsibility to himself and to his fellow Americans" (Drew & Hungerford, 1957, p. 315).

Nature study, which had encouraged students' appreciation of nature through experience with it, was passé and fifties conservation education writers deliberately distanced themselves from it. Nature was viewed in purely human terms, as one writer explained: "A natural resource does not truly become a resource until it has been converted by human management and creativity to human use and consumption" (Hone, 1958, p. 35). The belief was often expressed that resources "not-yet-discovered" would replace dwindling supplies of natural resources. Elizabeth Hone, in an article titled "Current Trends in Teaching Conservation" claimed:

> Conservation consists of the use of natural resources with the varying demands of the population so that resource supplies will not become exhausted before adequate supplies of equally useful resources are either discovered, invented, or otherwise produced. (Hone, 1957, p. 218)

Two authors, out of a sample of twenty for the fifties, presented divergent viewpoints. Armin K. Lobeck (Lobeck, 1954) suggested, "Just because we can mould (sic) nature to our own uses, does not necessarily mean that it is wise or desirable to do so" (1954, p. 158). William Brueckheimer (1956) in an article titled, "Conservation and the Nature of Social Problems: A Proposed Shift in Emphasis," pointed out that conservation problems are social problems rising from the political process. He suggested that social values allowing private property and mistreatment of natural resources were in direct conflict with true conservation goals (Brueckheimer, 1956, p. 199).

There was no mention at all of any environmental problems other than the issue of wilderness preservation and natural resource management.

The Sixties

In the sixties, the dimensions of the environmental problem were just beginning to be perceived. This recognition brought a variety of responses. The first signs of environmental activism were apparent in the founding of Greenpeace and David Brower's group Friends of the Earth. Legal considerations were becoming a part of

environmental thinking with the creation of the Environmental Defense Fund and the American Bar Association's publication Natural Resource Lawyer (Fox, 1981; Nash, 1989; Scheffer, 1991).

In 1964, the Wilderness Bill, first written in 1956, was finally passed and a National Wilderness Preservation System was established. Two years later, the National Wild and Scenic Rivers Act (1966) specifically protected free flowing rivers from technological interference. Numerous other environmental bills were introduced into Congress during the sixties, addressing a multitude of emerging concerns including protection for endangered species and marine mammals, humane treatment of laboratory animals, preservation of hiking trails, and control of air and water quality.

By 1963, three books had been published which obliged Americans to confront the consequences of their own unquestioning acceptance of the technology that had made life easier, cleaner, and cheaper. For most people, issues of wilderness preservation were tangible and dramatic concepts, though removed from day to day living. Now, Murray Bookchin, Rachel Carson, and Stewart Udall were suggesting there were quiet, but serious dangers lurking in our own back yards.

Murray Bookchin's book, Our Synthetic Environment (1962) described a array of environmental concerns; pesticide and insecticide poisoning of soils and water, urban crowding, harmful food additives, hormones and antibiotics used to increase food animals weight, radiation caused by fallout from nuclear tests and over-use of x-rays, and so on. At the time, Bookchin's conclusions were dismissed as "crackpot" ideas by many powerful governmental, business, and industrial organizations.

Published in 1962, marine biologist Rachel Carson's Silent Spring, presented a thoroughly researched and powerful case against the widely accepted and indiscriminate use of a wide variety of pesticides, insecticides, and herbicides; "elixers of death" as she called them. She explained in scientific detail the heavy price paid by rivers, wildlife, soils, and plants as well as the many threats to human health.

Like Bookchin, Carson was viciously attacked by enraged agricultural associations, chemical companies, and even nutritional organizations. However, the book was a huge popular success, bringing the issues of pesticide use and water pollution to public attention with a vengeance. By 1964, Congress had passed the Federal Insecticide and Rodenticide Act (FIFRA) requiring all pesticide products be registered with the Environmental Protection Agency (EPA). All of the synthetic agents Carson warned of in Silent Spring were eventually banned (Fox, 1981; Scheffer, 1991).

Carson's overriding appeal in Silent Spring was for humans to recognize their ethical responsibility toward all life forms, and to respect the diversity of nature and natural processes necessary to create the complex web of life.

Stewart Udall, Secretary of Interior during the Kennedy and Johnson administrations, was the lone government advocate for Rachel Carson during the storm over Silent Spring. Udall's book, The Quiet Crisis (Udall, 1963) presented an historical account of

environmental destruction and of conservation efforts from colonial times to the 1960s. Throughout the account, Udall vacillated between praising the virtues of technology and decrying its harmful effects. His ambivalence seemed to mirror the confusion that existed in the early part of the decade as people tried to come to terms with the meaning of a crisis they were just beginning to comprehend.

Two other writings deepened the dialogue. Paul Erlich, author of the popular Population Bomb (1968) revived Malthusian warnings of an impending imbalance between population and food supplies. Lynn White, Jr. first published his essay "The Roots of the Ecological Crisis" in Science (1967). In it he traced the crisis to two events: First, the fusion of science and technology that occurred in the late 19th century which elevated technology from a lower class phenomenon to a "blessed word in our vocabulary;" Second, the triumph of Christianity over paganism, which annihilated the connection of humans with nature, and replaced it with a dualism that not only separated the two, but insisted that exploitation of nature for humanity's purposes was God's will (White, 1970, p.23).

Just as there was confusion in the social consciousness over how to regard the new information, educators were trying to redefine an evolving discipline. In the fall of 1969, the Journal of Environmental Education was introduced. In its first issue, editor Clay Schoenfeld compared the old, conservation education, and the new, environmental education. He concluded that in comparison to conservation education, environmental education was globally focused rather than concerned with local or national issues, recognizes complexity and seeks open-ended solutions rather than concrete answers to isolated problems, concerned with ethics over pure efficient use of resources, based on ecological science and research instead of evangelical callings, human centered rather than resource centered, based on research rather than hunches, and perceived as an urgent concern rather than a trivial pursuit (, p. 2)..

As the broader concept of environmental education was embraced, new language was adopted. By 1969, the phrases "wise-use of resources" and "resource development" were being supplemented, if not replaced, by terms such as "environment," "conservation conscience," conservation ethic," "environmental degradation," "ecosystem," "diversity," "ecology," and "environmental quality." There was a new emphasis on the interrelationship between humans and nature. William B. Stapp, writing in the first issue of the Journal of Environmental Education, articulated the new focus when he claimed that the first of goal of environmental education is to:

> ...help individuals acquire a clear understanding that man is an inseparable part of a system, consisting of man, culture, and the biophysical environment, and that man has the ability to alter the interrelationship of this system. (1969, p. 31)

By the late sixties, the educational literature, catching up with the major issues debated in the social literature, was addressing problems of pollution, population, and pesticides. Though there was a shift in focus and a general recognition that the

environmental dilemma was more complex than admitted a decade earlier, science and technology were still considered to hold the answers to current and future problems. Matthew Brennan's statement is representative: "Conservation is the responsibility of science," he claimed, precisely because science has "created an environment in which man is not adapted to live..." (Brennan, 1967, p. 17)

Two authors, Wilson B. Clark (1969) and G. E. Brewer (1963) during this period challenged the underlying assumptions of most other educators of this time. Clark criticized environmental education as simply conservation education warmed over, and invited educators to examine three myths; the myth of endless abundance, the myth of infallible science, and the myth that the environment has the capacity to endure endless abuse. Brewer advanced Leopold's ideas of a land ethic, stressing that since ecological wisdom was not built into the marketplace, it is up to education to produce an ecologically literate society.

The Seventies

As we entered the seventies, interest in the environment was high, as participation in the first Earth Day, April 22, 1970 attested. New environmental misfortunes that raised the level of public concern and brought more people into the environmental community included acid rain in Canada, toxic waste contamination in Love Canal, a nuclear reactor meltdown at Three Mile Island, long gas station lines during the 1973 energy crisis, and a recent oil spill on Santa Barbara beaches. In 1978, there was a quiet beginning for a clamorous future debate - the spotted owl was designated an "indicator species.

Legislatively, it was an important decade for environmentalism. The 1970 National Environmental Policy Act established the Environmental Protection Agency and the Calver Cliffs Decision of 1971 required Environmental Impact Statements for all federally funded projects that affect the ecosystem. In 1973, the Endangered Species Act was expanded and the 1972 Clean Water Act and 1970 and 1977 amendments to the Clean Air Act strengthened pollution controls. The U. S. Department of Energy was formed by the Energy Organization Act in 1977, and the first Environmental Education Act was passed in 1970 (Fox, 1981; Nash, 1989; Scheffer, 1991).

The first comprehensive studies of the global environment were conducted, resulting in three detailed reports. Each made calculated predictions regarding the world's future needs and capacities. The Club of Rome's report, The Limits to Growth (1972) warned that the environmental problem was one requiring global reorganization and a rethinking of policy and practice in economic and technological development, founded on "a basic change of values and goals at individual, national, and world levels" (Meadows,Meadows,Randers, & Behrens, 1972, p. 195).

President Jimmy Carter's 1977 commissioned report, Global 2000 Report to the President, called for "prompt and vigorous changes in public policy around the world." The report predicted, as did Limits to Growth, grave imbalances in population and all resources (food crops, fresh water, forest products, minerals and fossil fuels), great

losses of rainforest, soil, ozone, and wildlife, and serious health risks due to nuclear power accidents and lack of proper waste disposal facilities (Barney, 1980).

Blueprint for Survival, written by the editors of the Ecologist, also studied the disruption of ecosystems and social systems. The authors' prescription for change was to educate citizens to live in smaller communities that reduce the human impact on the environment (Goldsmith, Allen, Allaby,Davoll, & Lawrence, 1972).

Plant Biologist, Barry Commoner, a leader in the environmental movement for many years, published The Closing Circle in 1971. In it, he described an environment operating within a closed, self-regulating system which humanity has disrupted with pollution and technology. He too, advised developing a new social system based on self-regulating communities. (Commoner, 1971)

Two other dimensions that were added to the environmental question during the seventies had to do with animal rights and legal rights for other nonhuman entities, such as trees and waterways. Peter Singer wrote Animal Liberation, (1975) focusing on protection for animals in the food industry and in scientific laboratories. Christopher Stone (1972) explored the legal ethics inherent in the question of granting natural objects legal recourse for damages incurred as a consequence of human action.

By 1970, environmental education was big news. The Journal of Environmental Education, conferred academic and professional legitimacy to the new field, the Environmental Education Act was passed by Congress in 1970, and Earth Day was a national educational event. Just as there was an increasing number of issues and solutions in the environmental literature, there was an interesting mix of proposals for educators. As yet however, there was no consistent definition for the field, even in the journal that was its disseminating vehicle. Neither was there much evidence that the education community had attended closely to the public debate for rarely was anything said regarding the studies, legislative actions, and issues explored in the social literature. Specific issues that were mentioned were those that had been identified in the fifties and sixties; pollution, pesticides, population, wilderness, soil conservation. There was no mention of animal rights, legal standing for natural entities, nuclear or toxic waste contamination, acid rain, oil spills or endangered species.

Authors spoke broadly of the ecological crisis, environmental degradation, or environmental quality.[1] The reason may be attributable to the fact that the focus during this period was centered as much on pedagogical orientation as on the content. Values clarification and moral development strategies were widely accepted classroom practices at this time, so it is not surprising that some authors would merge these approaches with environmental education (Kirschenbaum & Simon, 1973; Kohlberg, 1970). Two authors, John Miles (1977) and Don Kauchak (1978) placed environmental education completely within values clarification and moral reasoning contexts.

Several authors, reacting against the values education movement urged a return to facts based instruction (Gallagher, 1977; Gustafson, 1972; Hendee, 1972). Others, responding to the increasing emphasis on the needs of nature, advocated a return to a human-

centered curriculum. In 1972, Eugene M. Ezersky wrote in a Journal of Environmental Education article titled, "Priorities of Environmental Concern" that

> ...we have lost sight of the fact that in the life cycle, man is equally essential for the survival of the trees and the forests. There can be little doubt that man is endangering his environment, but there is equally little doubt that the environment is endangering man...(Ezersky, 1972, p. 11)

Although the most common perspective was still in the utilitarian conservation tradition, there were four writers who looked at the root causes of the environmental crisis and adopted ecocentric positions. Articles by Beatrice Willard (1976), Willis Harman (1970), and Earl M. Wajdyk (1972) addressed issues of cultural bias, technology, interdependence, and the ethical dimension of the human-nature relationship. Historian Roderick Nash (1970), presented a case for using conservation history to teach about cultural experiences and beliefs which bear upon our treatment of the land.

The Eighties

America in the eighties was a blend of unmitigated consumerism, rising poverty and homelessness, and growing environmental debate and activism. Popular culture and the popular press welcomed ecology, and environmental issues were discussed on the nightly news and in popular magazines and television programs. Industry, responded, at least superficially with "environmentally conscious" products and new stores with names like "Ecology House" appeared. Recycling was widely instituted in schools, hospitals, businesses, and private households.

Going on behind the commercial frenzy was a bitter struggle over land use. The need to rethink old habits of exploiting forests, soils, water, animals, and fish become more apparent in the eighties, and so did the drastic effect the necessary change would have on individual human lives. Ecological issues were framed as contests between people and the environment, resulting in personal antagonism, hostility and even violence between those on different sides. Major controversies erupted over saving spotted owl habitat in ancient forests, destructive open pit gold mining practices, and the damage caused by the grazing of cattle and sheep on public lands (Scheffer, 1991)

News from distant places added to the rising tide of environmental worries; we learned of the Alaskan oil spill, the Antarctic ozone hole, the Chernobyl nuclear disaster, and massive rainforest losses.

Responses were predictable. Government and industry policy makers adhered to a resource-use, economic based environmental philosophy, emphasizing scientific research for technological innovation (Anonymous, 1989b). Mainstream environmental organizations, such as the Sierra Club, Wilderness Society, and National Audubon Society, continued to work within the political and legal system to lobby for environmental legislation and argue environmental court cases (Scheffer,

1991). Ecoactivists and loggers clashed at environmental protest rallies and in old growth forests where protesters sat in trees to prevent logging (Foreman, 1991).

Ecocentric voices gained strength in the literature of the eighties. Among those expressing ecocentric views were ecofeminists (Diamond & Orenstein, 1990; Merchant, 1982), eco-activists (Foreman, 1991; Manes, 1990), and deep ecologists (Callicott, 1989; Devall & Sessions, 1985).

Ecology and philosophy joined in the deep ecology tenets that had been advanced by Arne Naess in 1973. Promoting Naess's ideas, Bill Devall and George Sessions (1985) analyzed contrasting views of environmentalism and explored the sources of deep ecology in their book Deep Ecology: Living as if Nature Mattered . The Trumpeter, a magazine of ecosophy, provided an official forum for deep ecology writings in the late eighties. J. Baird Callicott's book, In Defense of the Land Ethic (1989) placed Leopold's land ethic in the context of other ethical paradigms such as Singer's animal rights ethic and Native American land wisdom. Ethics were further explored in The Rights of Nature (1989) as Roderick Nash described the historical development of environmentalism as a moral and ethical imperative.

Environmental education writing reflected the new focus on deep ecology views. For the first time, the number of authors representing the two ends of the continuum were nearly balanced. Of nineteen articles studied, eight displayed a strictly reformist persuasion and six described a deep ecology perspective.

Two authors, (Herbst, 1980; Lubbers, 1982) argued from an economic vantage point. The unfinished agenda, said author Robert L. Herbst (1980),

> ...is to tie the knot between ecology and economics in the natural world...Eventually, when wisdom has repaired our tattered economics, we will even learn to measure environmental quality in dollars and cents. (p. 3)

Some writers, situated between reformist and deep ecology positions (Borden, 1985; Sponsel, 1987; Yambert & Donow, 1986) considered natural systems within a utilitarian context but accepted the concept of interdependence of biotic systems. They proposed the integration of environmental ethics into the curriculum in order to reduce the "fractionalization of knowledge" and to increase students' environmental conscience.

The surge in deep ecology views in the educational discourse is attributable, at least in part, to the fact that three of the articles, all appearing in the Journal of Environmental Education, were written by leaders in the deep ecology movement; Bill Devall, (1985), George Sessions, (1983), and J. Baird Callicott, (1982). Devall charged that the dominant themes in environmental education were "militantly opposed to ecological education." He wrote:

> ...until we admit our failure and drastically change the approach we are taking in most of environmental education curriculum suggested in JEE,

> then we will remain virtually irrelevant to the crisis of character and culture. (1985, p. 2)

George Sessions portrayed ecological education as a subversive counter to the deeply entrenched resource conservation and development ideology that controls traditional environmental education(1983, p. 32). Philosopher, J. Baird Callicott (1982) placed Leopold's land ethic within the context of contemporary education and challenged educators to teach ecologically, in Leopold's sense of the word - to be able to read the land as well as books and to be concerned with connections and relationships.

The other three deep ecology writers for this period also insisted on the need for a radical change in orientation toward environmental education. Jean MacGregor (1984) characterized the difficulty in defining environmental education as a problem of cognitive dissonance due to the necessity of blending ecological ethics with knowledge. Charles Roth (1988) accused educational leaders of being blinded by anthropocentrism and functioning as "willing contributors" by perpetuating myths that separate people from their roots. He pleaded for education to dispel the fallacy of humanism and breed a new patriotism to Earth First. Ralph Lutts (1985) stressed the importance of historical perspective and advised the use of story to provide a sense of place, continuity, and belonging.

Educational Discourse Summary

Issues

The educational literature was most consistent with contemporary issues during the fifties when it carried the conservationist message. It was also the most one-sided. Only the official view of conservation as patriotic duty was presented and preservationists were characterized as wasteful hoarders. The issues given the most attention in the late sixties and throughout the seventies were population, pollution, and pesticides. These problems were very much the focus in the social literature as well. Yet other publicly debated environmental questions relating to nuclear power, the energy crises, and endangered species, were ignored. Echoing the public dialogue, the educational discourse in the eighties debated how the value of nature should be determined - in terms of human economics or in terms of the intrinsic value of undisturbed natural systems. Many of the environmental concerns of the decade such as land use disagreements, ozone depletion, and rainforest deforestation were not specifically noted.

Assumptions

These articles were analyzed for their underlying assumptions about the human-earth relationship to determine if an author was expressing reform environmental beliefs or a deep ecology perspective.[2] The majority of the writings followed a reform ideology, although many combined elements from each perspective. The fifties and early sixties showed the most homogeneity of ideas with the variety of viewpoints increasing steadily as the environmental crisis was perceived as more complex and the social

literature broadened its scope. Though a deep ecology perspective was expressed much less often than the reform position, it was present throughout each decade studied. In the fifties and sixties only one writer adhered completely to all facets of a deep ecology doctrine. In the eighties, there were six writers comfortably located within a deep ecology perspective.

Language

As conservation education became environmental education, the language used to send its messages changed as well. "Wise-use," "resource-use," "resource development," "resource exploitation" - words used to denoted pride and patriotism during the fifties dominated the vernacular of conservation education as did Pinchot's slogan "the greatest good of the greatest number."

By the seventies the vocabulary of conservation was falling away and new terms were coming into use. Worries about "environmental quality" were replacing concerns over "resource depletion." The new terms, however, were likely to be used to express old ideas. For example an author might refer to the "ecosystem of spaceship earth," mixing the image of a natural system with a machine metaphor. Nevertheless, terms from the science of ecology expanded the environmental education conversation and by the eighties, the ethical and philosophical nuance of deep ecology was clearly a part of the discourse.

Sources

There was a striking shift from using government sources to citing authors of social literature. In the fifties, there were only six out of a total of sixty-three citations referring to writers of social environmental literature; in the eighties there were thirty. Inversely, out of a total of seventeen references to governmental sources, such as the U.S. Department of the Interior and the U.S. Forest Services, nine were cited in the fifties compared to only three in the eighties.(This probably accounts for the strong anti-preservationist stance in fifties literature.)

Aldo Leopold was the author cited most often and the only author to be cited every decade. Gifford Pinchot was the second most cited author. Nevertheless, it was Gifford Pinchot's "greatest good of the greatest number" ideology that predominated throughout the literature. As with the use of ecological language, it was not unusual for Leopold's ideas to be misunderstood and used to support a position contrary to his philosophy.

Conclusion

Cultural assumptions guide conscious and unconscious attitudes, values, and behaviors. Cultural acquisition is an on-going process transmitted through language which encodes explicit and implicit messages about what to believe. Embedded in this system is a subtle mechanism of rewards and punishments that perpetuates cultural forms, propositions, recipes, rules and functions (Goodenough, 1981). Our cultural

values and beliefs determine not only our place in human society, but our relationship with the environment.

Schools function within this cultural milieu. Pinar and Bowers (1992) propose that the ecological crisis, caused by the unwitting actions of a culture guided by anthropocentric values, is the result of an unexamined belief system that works against nature. Henry Giroux has pointed out that traditional curriculum, grounded in the dominant social paradigm that grew from Western enlightenment philosophies, is designed to perpetuate existing social practices. A majority of the environmental education writing studied here conformed to reformist environmental thinking with its belief in individual autonomy, human dominance over nature, and the infallibility of science and technology. Many built a "new" environmental curriculum upon old foundations and addressed only the symptoms of the environmental crisis.

Critical theorists, such as Henry Giroux and Michael Apple began a process of moving education beyond the facade of political neutrality and exposed its reproductive agenda (Apple, 1983; Giroux, 1988). Ecocentric education further discards the boundaries imposed by Cartesian linearity, to bring into focus the basic, taken-for-granted assumptions that have led to the ecological crisis. Ecocentric education accepts Gregory Bateson's ecocentric principle of a mental ecology in which humans are a part of an interactive system in which there is no unilateral control, and everything is part of one large mental process (Bateson, 1972; Bowers, 1991; Pinar & Bowers, 1992).

As even this cursory look at environmental history for the last forty years demonstrates, evidence of ecological damage has grown dramatically in each decade. When Aldo Leopold released his essay, "The Land Ethic," precious few were paying attention. Today his thoughts give sustenance to a new, yet very old, idea of connection with natural systems. As Bowers and Flinders (1990) put it, "educators have a responsibility to pass on to the young a mental ecology...that will not exacerbate the crisis" (Bowers & Flinders, 1990). Education has the choice to open the door to a new model of environmental education founded on an ethic of ecocentricity that accepts the moral imperative to help students construct a value system that works for the natural world, or to unwittingly perpetuate a set of beliefs that actually works against the creation of a truly sustainable society.

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[1]In 1985, Thomas Tanner analyzed the sources cited by authors writing for the Journal of Environmental Education from 1976 to 1983 and then compared his analysis with a similar study done by Ronald W. Force for the years 1969-1974. One of Tanner's conclusions was that in the early years authors looked more to "environmental-societal foundations to define the subject matter or conceptual structure of the field" (Tanner, 1985, p. 25). Later, when the emphasis switched to the development of values and attitudes toward environmental education, specific environmental problems were not addressed as often.

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[2]There were eight sets of opposing principles each representing an element of either a deep ecology or a reform environmentalism perspective.

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